

Aircraft type and registration: Pitts Special S1D G-BIRD

No & Type of engines: 1 Lycoming I0-360-B4A

Year of Manufacture: 1981

Date and time (GMT): 3 May 1986 at 1650 hrs

Location: Denham airfield

Type of flight: Private (aerobatic)

Persons on board: Crew — 1 Passengers — None

Injuries: Crew — None Passengers — N/A

Nature of damage: Damage to top wing, propeller, engine, spats and top of fin

Commander's Licence: Private Pilot's Licence with night rating

Commander's Age: 31 years

Commander's Total Flying Experience: 660 hours (of which 55 were on type)

Information Source: Aircraft Accident Report Form submitted by the pilot.

The pilot had departed from Denham airfield for a practice aerobatic flight, his second in G-BIRD that day, and had practiced various manoeuvres, including full control deflections, with nothing unusual being noticed.

After approximately 25 minutes he returned to the airfield and landed quite normally on runway 25, following a standard sideslipping approach, touching down about 100 metres into the runway. The aircraft was braked gently and kept straight by a combination of rudder and differential brake when, at a speed of around 20 mph the tail began to lift. The pilot relaxed the braking pressure but the tail continued to rise until, when nearly stationary, the propeller struck the ground and the aircraft pitched forward onto its back. As this happened, the pilot switched off the magnetos and fuel and was able to quickly vacate the aircraft without injury.

Examination of the aircraft, whilst still inverted, showed that the right wheel required considerable effort to turn by hand, with the left one free to rotate normally.

After righting, the aircraft was pushed to a hangar on its wheels by which time it was apparent that the brakes were fully released. The pilot stated that at no time before or after the accident was the parking brake engaged and that at all times it was in the disengaged position. As the aircraft is possibly the only one in this country fitted with hydraulic parking brakes, this system is not normally used in order to avoid confusion with other Pitts Specials flown by the same aerobatic team.

Detailed examination of the aircraft's braking system was carried out by the pilot together with an engineer from the maintenance organisation which was normally responsible for the aircraft. This revealed that the parking brake system on the left master cylinder was inoperative

and that the Bowden cable to the lever on the right master cylinder was not clamped securely. It was demonstrated that if rapid movements of the rudder pedals were made, of the sort carried out whilst performing aerobatics, then it was possible for the Bowden cable sheath to move upwards, clear the clamp and lodge in a position to at least partially activate the brake, without producing any abnormal brake pedal feel.

It is a characteristic of this aircraft that brakes are always used to keep it straight during the landing roll, with it being necessary to counter any swing by the immediate use of brakes and rudder. The pilot considered that in this case he instinctively countered a swing to the right produced by a partially activated right brake until, at low speed and with a reducing elevator effectiveness, he relaxed braking pressure with the result that the aircraft tipped forward about the stiff right wheel. He also considered that during the subsequent recovery of the aircraft it was quite possible for the Bowden cable outer sheath to have moved again to release the brake.